#### SCIENCE AND MECHANICS.

RENDERING GAS-BURNERS MORE SAFE. Electricity has not yet displaced gas altogether as an illuminant, nor will it do so for a long while yet A large number of people, therefore, continue to have a practical interest in gas-burners. An attach-nent for such devices has recently been paiented by Benjamin F. Field of Los Angeles, Cal., designed to serve a good purpose. One occasionally hears of partial or complete suffocation from carelessness in extinguishing gaslights in sleeping rooms. Inexperierce, inattention, fatigue or possibly intoxication prevents the valve from being properly closed when the gas is turned off, and probably this has when the gas is turned off, and probably this has more than the alleged blowing out of the light to do with the accidental asphyxiation reported every now and then by the newspapers. Proceeding on that theory, at any rate, Mr. Field affixes to the valvestem a light spiral spring, which continually tries to shut off the gas. When the gas is turned on, a jointed thumbpiece may be caught in any one of several notches, and held there automatically. To put the light out, it is necessary only to disengage the thumbpiece. The spring then closes the valve, and closes it tight. The mechanism does not interfere at all with the regulation of the size of the flame.

A SWINGING AQUEDUCT. ONE ENGLISH CANAL CARRIED ACROSS ANOTHER ON A DRAWBRIDGE.

recently opened ship canal, which connects the city of Manchester, England, with the sea, is of ommercial rather than engineering importance construction; yet one of the novel features of the enterprise is so curious that it deserves passing notice. It is a very common occurrence for one railroad track to be carried over another; much less frequently we see one canal conducted across the line of another; but to have the intersections of two water routes provided with a drawbridge is still more unusual. This, however, was found the most tisfactory way of dealing with the problem presented where the route of Manchester's new highway to the Mersey ran up against the old Bridge-water canal, leading southward from Wigan, in

J. S. Conover Company

Takes pleasure in inviting you to inspect latest designs in Fireplaces, Mantels, Tiles, and artistic metal work at its new building,

101 Fifth Avenue, NEAR EIGHTEENTH STREET.

here indicated. There is no use in getting up things which the car builders will not touch.

Scores of couplers of the Janney class have been patented, and many of them are in actual use. Every few menths the Master Car Builders' Association has some competitive tests, free to all, at which these devices are subjected to prefty rough treatment to discover their defects. Some of the breakages are due to poor material; others result from faulty design. The former are chargeable to the manufacturers; the latter deserve the attention of inventors. One of the weak points in most of the various Janney type couplers is the knuckle. Strength is one of the prime requisites of perfection in such apparatus.

Another is simplicity. The vast majority of these inventions are too complicated. They have too many parts and joints. Indoors, the model works becautifully; out-of-doors, in actual use, the mechanism itself fills with rain or snow and freezes up, gets out of order in some other way, or goes to smash under a slight shock. And third, it is desirable that a coupler he truly automatic. Most of those that are called so are not self-setting as well as self-locking. A truly automatic coupler would be left, when one car is separated from another, in such a condition that, without being touched by the hand or a lever or a string in the mean time, it would connect itself immediately with the next cart that strikes it endwise. When some one devises a coupler of the Janney type which will do this, do it better than any other one, and combines strength to be able to find a market for it without treatible.

under fact which must be borne in mind is that most of patents, covering almost every conceivable res of patents, covering almost every conceivable ret of a coupler, have already been taken out, it bought up by some of the manufacturers of plers. It would be almost impossible for an inter, even if he had the capital, to so ahead and nufacture his own coupler, as he would be liable

present the alternate currents in practical use come well within that limit, seldom having a frequency of over 133. PAPER FOR TYPEWRITERS.

SUPERIOR QUALITY OF THE AMERICAN PRODUCT
—FOREIGN MARKETS INVADED.

It is recognized by foreign scientific publications that the United States not only makes most of the world's typewriting machines, but also most of the paper used thereon, especially that of high grade, Yankee manufacturers now compete successfully with those of England, France and Germany in what are to all of these countries foreign markets, but also in the British, French and German home

but also in the British, French and German home markets. When it comes to fine papers, this particular success is due to the purer water often used, the better machinery and the Alexander-like enterprise of the producer.

When it comes to paper for typewriters, of which there are a great variety, the essentials are a good finish and stock heavy enough to stand erasures without leaving a hole. Some of the best stationery intended for use with a pen is unsuited to the machine, by reason of its rough surface. The smoothness imparted to book paper by size and calendaring is not, however, quite what is desired for typewritten documents. A "bond finish" gives about the right surface. This is secured by sandwiching smooth cardboards in with the sheets, applying a stiff cover, and then putting the stack under rollers weighing two or three tons. The labor involved in "plate pressure" is an important item in the cost of such paper.

PRIVATE CAPITAL WANTED.

WHAT THE RAPID TRANSIT COMMIS-SIONERS CONSIDER NECESSARY.

FORE THE MAYOR AND AL-

that private capital can be secured to build the sed Wilson underground road. They have apcerning the advisability of the city lending its credit, to allow the city to lend funds to promote a priwhen the Wilson plan will be laid before the Mayor, but it is thought that after the meeting of the commission on Tuesday the plan will be in such a shape that it can be presented to the Mayor and the Board of Aldermen. The Commissioners think that the proposition is so tempting that private capital may be glad to get hold of the scheme. The plan cannot come before the people until next November, and that, of course, is one reason why the Commissioners would rather have private capital handle the enterprise. The Rapid Transit act, according to one of the Commissioners, should receive the attention of the present Legislature, and be slightly modified in order to make the present Commissioners said yesterday that he was confident act there would be plenty of capital ready to take proposed constitutional amendment unnecessary.

Another Commissioner said that the commission had not pledged itself to the Wilson plan, but that they thought it the best one thus far presented, and if the money part of it could be satisfactorily adjusted there would be no doubt that they would Some opposition to the Wilson plan, if it is accepted, and if a franchise is given to build it, may be met in the person of Jesse W. Reno, who has appeared before the commission so many times that appeared before the commission so many times that he is considered a fixture at all rapid transit meetings. Mr. Reno has been since 1801 a steady advocate of an underground road, and at each meeting of the commission he has come forward with his plans, but he has generally been asked to retire bocause he would make no mention of the capitalists behind him. He has steadily maintained that he is forming a syndicate to hid for the franchise when it shall be offered, and he asserts that he holds two patents which cover all the features of the tunnel proposed by the Wilson plan. If Mr. Heno is in carriest there may be some inferential fligation concerning the construction of the road if the Wilson syndicate gets the franchise.

HOW TARIFF TINEFRING IS DONE.

There was considerable talk of throwing the fariff bill into caucus and amending and improvence it in the course of a session lasting two or true hours, and a member of the Ways and them for the sub-committee as think up to the chemical schedule will flustrate the labor inverted while the sub-committee was fixing up to chemical schedule will flustrate the labor inverted making up a tariff tall. There were before the sub-committee at the time capies of the airiff act of 1883, of the Mills bill and of the Members that the first of 1883, of the Mills bill and of the Members that the first of 1883, of the Mills bill and of the Members that the first of 1883, of the Mills bill and of the Members that the first of 1883, of the Mills bill and of the Members that the fixed at one fluore, another that it be fixed another fluore. Finally they took a vote on it, o voting one way and two the other. It was a an and as Tarsies, of Missouri, who was realing paper which he was holding up before his face a suspicious manner, had not voted, they appare which he was holding up before his face a suspicious manner, had not voted, they appare which he was holding up before his face a suspicious manner, had not voted, they appare which he was holding up before his face a suspicious manner, had not voted, they appare which he was holding up before his face a mother of the till the truth, unlessed in the first of the first

## The American Art Galleries,

Madison Square, South, New York.



## IMPORTANT ANNOUNCEMENT.

Executor's Unreserved Sale.

A Remarkable Collection of Nearly Four Hundred, Including Many

Rare and Costly

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WATER COLORS, ETCHINGS, AND ENGRAVINGS,

BELONGING TO THE ESTATE OF THE LATE

## GEORGE I. SENEY, ESQ.,

The entire collection to be sold at auction absolutely without reservation or protection whatseever, by order of NELSON ROBINSON, ESQ., Executor,

ON THE EVENINGS OF FEBRUARY 7TH, 8TH, AND 9TH, AT 8 O'CLOCK,

### AT CHICKERING HALL.

CONCLUDING ON THE AFTERNOON OF FEBRUARY 10, AT THE AMERICAN ART GALLERIES.

#### ARTISTS REPRESENTED:

LAURENS, J. P.

LESSI, TITO

MERK, E.

MEYER, CLAUS MICHEL, GEORGES

MILLET, J. F.

MOLITOR, T.

MORAN LEON.

LEROUX, CHARLES

LIPPINCOTT, W. L.

MALL CHRISTIAN

MARRIS, WILLEM

LOHBRICHON, T.

LEADER, B. W. By 2 examples.

MADRAZO, RAIMUNDO DE

MARR, CARL, By 6 examples.

MELIN, J. By 2 examples.

MAUVE, ANTON. By 3 examples.

MESDAY, H. W. By 2 examples.

MILLET, F. D. By 2 examples.

MINOR, ROBERT C.

MUNTHE, LUDWIG

MUSS-ARNOLT, G. McCORD, G. H. By 3 examples.

MCENTEE, JERVIS

NEUBERT, L.

NICSY, E.

OELDER, G.

PELOUSE, L. G.

PICKNELL, W. L.

QUADRONE, G. B.

RAFFAELLI, T. F.

REHN, F. K. M.

RICO, MARTIN

ROYBET, F.

RYDER, P. P.

SALMON, TH.

SCHLEICH, R.

SMITH-HALD, F.

SWOBODA, R. L.

TISSOT, J.

RIBERA, ROMAN

PREYER, J. W.

METTLING, LOUIS. By 2 examples.

MONET, CLAUDE. By 2 examples.

NEUHUYS, J. A. By 4 examples.

PARTON, ARTHUR. By 2 examples.

PEARCE, CHARLES SPRAGUE. By 2 examples

PAULI, RICHARD. By 2 examples.

PETTENKOFFEN, A. VON

POITEVIN, EUGENE LE POKITONOW, IVAN. By 5 examples.

RANGER, H. W. By 3 examples.

ROBBINS, H. W. By 2 examples.

SANCHEZ-PERRIER, E. By 2 examples.

STEVENS, ALFRED. By 9 examples.

TAMBURINI, A. By 2 examples. THORON, O. VON. By 3 examples.

THULSTRUP, THURE DE

ROELOFS, W. By 4 examples.

ROUSSEAU, THEODORE

SALMSON, HUGO F.

SCHREYER, ADOLPHE

STEINHEIL, ADOLPHE

MARIS, JACQUES. By 2 examples.

LEFEBURE, JULES. By 3 examples.

LEROLLE, HENRI. By 4 examples.

OIL PAINTINGS. ACHENBACH, ANDREAS ADAMS, J. CLAYTON ARTZ. ADOLPHE BAKER, W. BLISS REDINL P. BILLET, PIERRE BISCHOF, C. BLAKELOCK, RALPH A. BONHEUR, AUGUSTE BOUGHTON, GEO. H. By 2 examples. RUNKER, DENNIS M. CARLSEN, EMILE There was considerable talk of throwing the CAZIN, JEAN CHARLES. By 2 examples, ariff bill into caucus and amending and improv-CARPENTIER, E. CHARNAY, ARMAND. By 2 examples. DAVIS, CHARLES H. By 7 examples. DELACROIX, EUGENE DEMONT-BRETON, VIRGINIE DESCHAMPS, LOUIS. By 5 examples. DEWEY, C. MELVILLE DIAZ, N. V. By S examples DIELMAN, FREDERICK DUPRE, JULES. By 6 examples. EDELFELDT, ALBERT. By 3 examples. EICHELBERGER, ROBERT FROMENTIN, ÉUGENE GIFFORD, R. SWAIN. By 4 examples. HAMILTON, HAMILTON HARBURGER, EDMUND. By 2 examples. HARLAMOFF, ALEXIS. By 3 examples. HARPIGNIES, HENRI HARRISON, ALEXANDER. By 5 examples.

TROYON, CONSTANT. By 4 example ISRAELS, JOSEF. By 4 examples. UHDE, F. VON. By 4 examples. JACQUE, CHAS. E. By 3 examples. VAN ELTEN, H. D. K. JACQUET, GUSTAVE VEYRASSET, JULES JETTEL, EUGENE VIBERT, J. G. By 2 examples. JIMINEZ, LUIS VOLLON, A. By 9 examples. JONES, H. BOLTON. By 3 examples. WAHLBERG, ALFRED. By 5 example JONGKIND, J. B. By 3 examples. WENGLEIN, JOSEPH KAEMMERER, F. H. WEYL, MAX KNAUS, LUDWIG. By 2 examples. WIGGINS, CARLETON KNIGHT, D. RIDGWAY WOOD, T. W. KNIP, HENRIETTA WYANT, A. H. By 7 examples. KOEHLER, ROBERT ZIEM, FELIX. By ? examples KOWALSKI, A. W. By 2 examples. ZUGEL, H. KUEHL, G. LANG, HEINRICH

#### WATER COLORS.

ARTZ, ADOLPHE CAFFIERI, H. CHEVILLARD, V. CONANT, MRS. C. W. CUVILLON, R. DE FREER, F. W. HARPIGNIES, HENRI. By 8 example HEILBUTH, FERDINAND HERKOMER, HUBERT HOMER, WINSLOW. By 3 examples. ISRAELS, JOSEF. By 8 examples. KNIGHT, D. RIDGWAY MARTIN, H. DE MORAN, EDWARD NEUHUYS, A. NICOL, ERSKINE RICHARDS, W. T. RICO, MARTIN ROSENBOOM, MARGARETA. By 3 emm TRYON, D. W. VILLEGAS, JOSE

### DRAWINGS.

BRILLOUIN, GEORGES L'HERMITTE, L. A. By 2 examples.

#### ETCHINGS.

BRACQUEMOND, FELIX. By 2 examples. BRUNET-DEBAINES, A. By 7 examples. CHAUVEL, THEOPHILE. By 4 examples. DAKE, C. L. FOCILLON, VICTOR FOX. H. C. KÖEPPING, CHARLES. By 2 examples. LOPISGICH, G. A. MACRETH, R. W. By 2 examples. RAJON, PAUL. By 2 examples. WALKER, CHARLES A. By 1 WALTNER, CHARLES. By 8 example

#### ENGRAVINGS.

ATKINSON, F. BARNES, G. C. BRIDGEWATER, H. SCOTT CALAMATTE, LUIGI, CHANT, J. J. EVERY, G. W. H. FRANCOIS, ALPHONSE GAVAVAGLIA, GIOVITA, LEFEVRE, ACHILLE LONGHI, GUISEPPE MANDELL, EDWARD. By 3 examples. MASSARD, J. B. R. U. MERCURI, PAUL MORGHEN, RAPHAEL. By 8 examples. MULLER, FRIEDERICH. By 2 examp RAIMOND, C. SIMMONS, W. H. STOCKS, LUMB TARDIEU, P. A. TOMPKINS, CHARLES A. . TOSCHI, L. TOSCHI, PAOLO. By 2 examples. TURRELL, ARTHUR WILLE, J. G.

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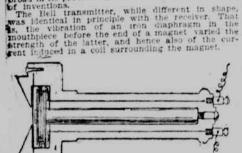
INNES, GEORGE. By 13 examples.

ISABEY, EUGENE L. G.

HAWKSLEY, ARTHUR

THE AMERICAN ART ASSOCIATION, Managers.

No. 6 East 23d Street, Madison Square, South.



THAT EXPIRING TELEPHONE PATENT.
ELL'S RECEIVER SOON TO BE PUBLIC
PROPERTY-STATUS OF SOME KINDRED

PATENTS.

Makers and sellers of telephones have been look

ing forward eagerly to the expiration of an im-

market would be opened to them which heretofore

they could not legally enter. The particular patent

here referred to is that granted to Graham Bell for his receiver. In this device, it will be remem-

rtant patent on January 30, 1894, as thereby a

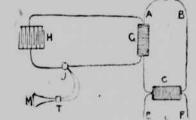
a scheme was not deemed feasible; and hence the smaller channel was borne over the larger. But a fixed aqueduct would have interfered with the masts, if not the smokestacks, of big ships; and therefore a swinging span, like that of an ordinary drawbridge, was resorted to. Obviously, the stationary ends of the severed waterway needed to be, and they are equipped with gates, which must be and they are equipped with gates, which must be and they are equipped with gates, which must be and they are equipped with gates, which must be and they are equipped with gates, which must be and they are equipped with gates, which must be and they are equipped with gates, which must be and they are equipped with gates, which must be an excellent general idea of this country should have a few of his couplers made, to open the "draw" with a floating barge on it. Our cut, which is a reproduction from "Black and White" (London), does not show the gates, but the invention called the production of the state of the coupler of the couple of the coupler of the couple DR. M. I. PUPIN'S RESONANCE EXPERI-

MENTS.

INVESTIGATING LOW FREQUENCY ALTERNATING CURRENTS WITH A TELEPHONE. Most schoolboys are familiar, through reading if not by observation, with the phenomenon of part "resonance." It is well-known that a tuning-fork, prohere referred to is that granted to Graham be.

for his receiver. In this device, it will be remembered, a small bar magnet in the tube terminates just short of a thin metallic diaphragm, or members, and the latter result from changes are caused by the variations in the magnet's attractive power, and the latter result from changes of intensity in the electric current let in from the main line and sent through a coll of fine copper wire around the end of the magnet next the diaphragm. This patent, like the fundamental one covering the use of electricity in transmitting arguments as week or two ago, be reformed some experiments a week or two ago, be reformed some experiments a week or two ago, be for the New-York Academy of Sciences (section of Astronomy and Physics), and the institute of Electricity in transmitting arguments are contenting the construction of the wall son syndicate gets the franchise.

The Repul Transit Committee of the Real Estate first sounded. This sympathetic action of the catgut first sounded. This sympathetic action of the catgut in string, near it, and having the same pitch, be first sounded. This sympathetic action of the catgut first sounded. This sympathetic action of the cargument in the will be attended to the fact that both vibrate at exactly the same rate. If, however, by loosening on the steel is due to the fact that both vibrate at exactly the same rate. If, however, by loosening on the steel is due to the fact that both vibrate at exactly the same rate. If, however, by loosening on the steel is due to the fact that both vibrate at exactly the same rate. If, however, by loosening on the steel is due to the fact that both vibrate at exactly the same rate. If, however, by loosening on the steel is due to the fact that both vibrate at exactly the same rate. If, however, by loosening on the land of the Charles of the Employ and the latting of the key of the Rapid First the Wilson Fisher on the contention of the contention of the content of the Rapid Fish on the wilson same state. The previously silent, can be set a humming, if a vio-He lectured on this subject at least once last spring; but in his more recent talks his apparatus was somewhat different, and his revelations were carried a little further than on the former occasion. His plan of procedure may be roughly indicated by the diagram herewith. A dynamo at D generated an alternating current, flowing through the circuit A B. At C was an induction coil which excited one secondary current, E F, that was led off to operate a motor. Another was produced by a small coil at G. At H was a condenser, and at J a self-induction coil. The former, as imperated the chemical schedule will illustrate the labor in the chemical schedule will fillustrate the labor in the distrant consisted of two ferous connecting with one set and the other wire with the other set. By inserting place in making one wire of places in service, and therefore the circuit connecting with one set and the other wire with the other set. By inserting place in making one wire of places in service, and therefore the celestrician can vary the number of places in service, and therefore the celestrician can be like that in a speed of a good many turns of carsfully insufined copper wire, so wound as to leave a hole like that in a speed of thread, running lenthy insufined copper wire. So wound as to leave a hole like that in a speed of thread, running lenthy insufined copper wire, so wound as to leave a hole like that in a speed of thread, running lenthy insufined copper wire. So wound as to leave a hole like that in a speed of thread, running lenthy insufined copper wire, so wound as to leave a hole like that in a speed of thread, running lenthy insufined copper wire. So wound as to leave a hole like that in a speed of thread, running lenthy insufined copper wire. So wound as to leave a hole like that in a speed of thread, running lenthy insufined copper wire. So wound as to leave a hole like that in a speed of thread, running lenthy insufined copper wire. So wound as to leave a large wire wire that in a speed of thread, running lenthy insufined copper wire. So wound as to leave a hole like that in a speed of thread, running lenthy insufined copper wire. So wound as to leave a hole like that in a speed of thread, running lenthy insufined copper wire. So wound as to leave a hole like that in a speed of thread, running lenthy have the cell that it was a local thread the tenthy in a supplemental speed on the first and the like that it was a local thread the tenth in the other. It was a local thread the tenth in the that it was a local thread the tenth in the balance of which he was boding up before his face



and the setting discontinue with the fewer of the force of the fewer o

